

ARNOLD ARBORETUM

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Lindens. So far as flowers are concerned the interesting trees in the Arboretum in July are the Lindens of which there is a large and well established collection in the meadow on the right-hand side of the Meadow Road. Linden-trees are found in eastern North America, eastern Asia, the Caucasus, and in Europe, and the species are usually widely distributed and common forest trees. All the species are quite similar in the character of their flowers and fruit, and chiefly differ in the shape of their leaves, in the presence or absence of hairs on the leaves and branchlets and in the nature of this hairy covering when it exists. A curious fact about Linden-trees is that in the flowers of the American species there are five petal-like scales opposite the petals and connected with the clusters of stamens, and that in the flowers of the Old World Linden-trees these petal-like scales do not occur. Another interesting fact which has been learned here about Linden-trees is that in the Arboretum the European species and their hybrids are more vigorous and handsomer trees than the Asiatic species, although with few other exceptions eastern Asiatic trees give more satisfaction in eastern North America than the trees of western Europe. The European Lindens, too, grow more rapidly than the American species which have never been very generally planted in this part of the country, with the exception perhaps of the northern *Tilia glabra* which oftens suffers here in dry summers from the attacks of the red spider which disfigures and often causes the leaves to fall in August, especially when it is planted as a street tree. This tree usually appears in books under the incorrect name of *Tilia americana*. It is a splendid tree in the forests of northern New England and eastern Canada, where it is found from northern New Brunswick to the shores of Lake Winnipeg, and is less common and of smaller size southward. The leaves are destitute of

hairs with the exception of the large conspicuous tufts in the axils of the veins on their lower surface which is light green and lustrous. Three other American species are established in the Arboretum, *Tilia neglecta*, *T. heterophylla* var. *Michauxii* and *T. monticola*. The first of these trees differs from *Tilia glabra* in the short, gray, finely attached pubescence which covers the lower surface of the leaves during the season and in the small inconspicuous tufts of axillary hairs. This is also a common northern tree which often grows with *Tilia glabra* and has usually been confused with it in books on American trees. It has a wide range from the valley of the St. Lawrence River in the Province of Quebec through the northern states, ranging southward along the Appalachian Mountains to North Carolina and westward to southwestern Missouri. This tree, which has not been many years in the Arboretum, has so far escaped the attacks of the red spider, and has grown rapidly and proved to be a good tree here. *Tilia heterophylla* var. *Michauxii* is a northern variety of a species widely distributed in the southeastern states. It differs from *Tilia glabra* and *T. neglecta* in the thick white down or tomentum which covers the lower surface of the leaves during the season and on the leaves of upper branches is often brown. This is a handsome tree with slender, reddish or yellowish brown branchlets and small, slightly flattened winter-buds. It occurs in western New York and is widely distributed southward from the valley of the Susquehanna and the lower Ohio Rivers, in the southern states being usually confined to the slopes of the Appalachian Mountains and their foothills. This tree is hardy in the Arboretum where it has grown more slowly than *Tilia neglecta* and *T. monticola*. This last is the most conspicuous of the American Lindens which have been satisfactorily tested in the Arboretum. It is the tree which has been incorrectly called *Tilia heterophylla* in most books in which American trees have been discussed. It is found only on the slopes of the southern Appalachian Mountains from Virginia to North Carolina and eastern Tennessee, growing with *Tilia heterophylla* var. *Michauxii*. From that species it differs in its much stouter branchlets, much larger compressed winter-buds, larger leaves very oblique at the base, often seven or eight inches long, thickly covered below with white tomentum and hanging on long slender stalks. The flowers are larger than those of any other American Linden. This Linden has grown more rapidly in the Arboretum than *Tilia heterophylla* var. *Michauxii* and promises to be a valuable tree in northern parks. There are three Linden-trees in eastern Europe, *Tilia platyphyllos*, *T. cordata* and *T. vulgaris*. The first has yellowish green leaves covered on the lower surface with soft hairs which also cover the young branchlets. This is the first of the European Linden-trees to bloom in the Arboretum where it is growing with several of its abnormal varieties, including one with deeply divided leaves (var. *asplenifolia*), one with slightly lobed leaves (var. *vitifolia*), and another of pyramidal habit (var. *pyramidalis*). These varieties are curious rather than beautiful, and have little to recommend them as ornamental trees. *Tilia platyphyllos* appears to be the common Linden sold by American nurserymen as "European Linden." It is perfectly hardy but as an ornamental plant it is the least desirable here of the European Lindens. Much handsomer is the small-leaved Linden, *Tilia cordata*, which is the last of the Lindens in the collection

to open its flower-buds. The leaves are often broader than long, with a heart-shaped base, very dark green above and pale below, and rarely more than two and a half inches in length. This tree has grown slowly here and is still a broad-based, densely branched pyramid. It is not common in American plantations, and the Arboretum has not heard of any large trees in the United States. In central and northern Europe trees a hundred feet tall, however, are not uncommon. The third of the Lindens of western Europe, *Tilia vulgaris*, is believed to be a natural hybrid between *Tilia platyphyllos* and *T. cordata*. It is a large tree with leaves dull green on the upper surface, lighter on the lower surface and destitute of hairs except in the axils of the veins below; in the Arboretum it flowers a week or ten days later than *Tilia platyphyllos*. There are fine old specimens of this tree in the neighborhood of Boston, and it is the best of all Lindens in this climate to shade city streets. It is this tree which has been successfully used in Boston on Louis Pasteur Avenue which connects the Harvard Medical School with Audubon Road.

The two silver-leaved Lindens of eastern Europe, *Tilia tomentosa* (sometimes called *T. argentea*) and *T. petiolaris*, are handsome trees of unusual appearance which might well be more often seen in American plantations. *Tilia tomentosa*, which is a common tree in the forests of Hungary, is a large tree with erect branches which in this country form a broad, compact, round-topped head, and large, erect leaves, dark green above and snowy white below. This tree has been a good deal planted in the parks of New York City where large and handsome specimens can now be seen. It appears to be less well known in New England. *Tilia petiolaris* is a handsomer tree and one of the most beautiful of the exotic trees which can be successfully grown in this climate, as can be seen in Newport, Rhode Island, where there are many noble specimens. It is a tall tree with drooping branches which form a narrow head, and leaves which are silvery white on the lower surface and, drooping on long slender stalks, flutter gracefully in the slightest breeze. This tree is not known in a wild state and its origin is uncertain. *Tilia spectabilis*, which is believed to be a hybrid of *T. petiolaris* or *T. tomentosa* with *T. glabra*, is a handsome fast-growing tree with the large leaves of the American species and silvery white on the lower surface. This is one of the handsomest Lindens in the Arboretum collection. The var. *Moltkei* of this hybrid is a tree of denser habit and greener leaves, and in this climate a handsomer and more desirable tree than *T. glabra*. It originated many years ago in the Spaeth Nursery near Berlin. The Crimean Linden (*Tilia euchlora*, sometimes called *T. dasystyla*) is distinct in its dark green lustrous leaves, and is believed to be a hybrid between *Tilia caucasica* and *T. cordata*. This beautiful tree is hardy in the Arboretum, but it does not grow as well here as the European species and certainly not as well as it does in some of the countries of western Europe where it has been used and is recommended as a street tree. *Tilia caucasica*, one of its supposed parents, is not in the Arboretum collection.

Asiatic Lindens have not yet given much promise of growing here into large or handsome trees. Nearly every species from eastern Asia which has been described has been planted in the Arboretum more than

once and most of them are still growing here. They are all quite small with the exception of *Tilia japonica* which was raised at the Arboretum from seeds collected in Japan by Professor Sargent in 1892. It is a small tree here with leaves very similar to those of *Tilia cordata*, of which it has sometimes been considered a variety. The Japanese tree is chiefly interesting as the first of all the Lindens here to unfold its leaves in the spring. When Lindens bloom is a happy time for bees, for the flowers of all Linden-trees contain large quantities of nectar. Unfortunately that of *Tilia tomentosa* and *T. petiolaris* is poisonous.

Tripterygium Regelii. Climbing plants with handsome foliage and a conspicuous inflorescence easy to grow and hardy in New England are not too numerous, and Mr. Jack's introduction several years ago from Korea of *Tripterygium Regelii* made an important addition to the number. It is a near relative of the Bitter Sweets (*Celastrus*) and a native of Korea and northern Japan, where it rambles over rocks and bushes, and often climbs with stems fifty or sixty feet long into the tops of trees. The leaves are long-pointed, dark green, and often six inches in length. The small white flowers are produced in narrow open clusters ten or twelve inches long, and they are followed by showy, three-lobed, and three-winged fruits from half an inch to an inch long. By pinching the young shoots this vine can be grown as a shrub. Such a plant is now growing and flowering in the Shrub Collection, where it is also growing naturally on the trellis next to the different species of *Celastrus*.

Periploca sepium. This is another handsome twining plant which the Arboretum owes to the labors of Mr. Jack in Korea. It is growing on the trellis near the *Tripterygium* and is unusually full of flowers this year. It is a plant with slender stems, pointed dark green and very lustrous leaves about three and a half inches in length and not much more than half an inch in width, and small flowers in few-flowered clusters. The flowers do not make much show when seen from a distance, but on close examination show that they are green on the outside, dark purple with a five-lobed crown at the base on the inside, and that they are pleasantly fragrant. The plants in the Arboretum have not yet produced their slender pod-like fruits, but as they send up numerous root suckers this vine can be easily propagated and might soon become common in northern gardens. Much better known is *Periploca graeca* from southern Europe and western Asia which has not yet proved hardy in the Arboretum.

Lonicera prostrata. The attention of persons looking for plants suitable for ground cover is directed to this Honeysuckle discovered by Wilson near Sungpan in Szech'uan, western China, at an altitude of about twelve thousand feet above sea-level. It has long slender branches which lie flat on the ground, so that the plant is only a few inches high, small bluish green leaves, small inconspicuous yellow flowers and small red fruit. As a garden plant this Honeysuckle has nothing to commend it but its habit which should make it useful to cover the ground among large shrubs and on the borders of shrubberies. *Lonicera prostrata* is growing on the southern slope of Bussey Hill with the other new Chinese shrubs.